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(71) Applicant

Peter Sebastian

2 Sycamore Close

Upton

Wirral

Merseyside

(72) Inventor

Peter Sebastian

(74) Agents

Potts Kerr and Co

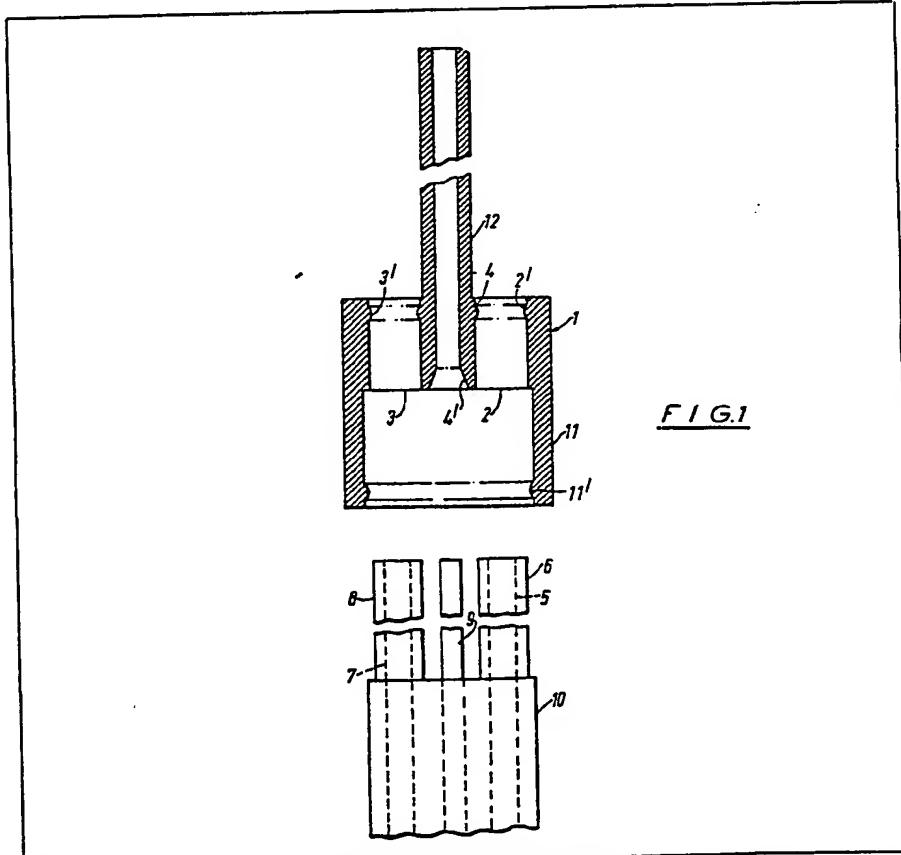
15 Hamilton Square

Birkenhead

Merseyside L41 6BR

(54) Electrical insulating device

(57) An insulating device for use with the ends of electric cables, comprising a member (1) of electrically insulating material which has an aperture or passage (4) for receiving a central earth core (9) and has receiving portions (2 and 3) for the positive and negative cores (5 and 7) disposed either side of said aperture or passage (4) and separated therefrom by the insulating material, such that when the device is inserted into position on the end of a cable (10), the three cores (5, 7 and 9) of the cable (10) are spaced apart in a manner reducing the likelihood of short circuiting during testing.

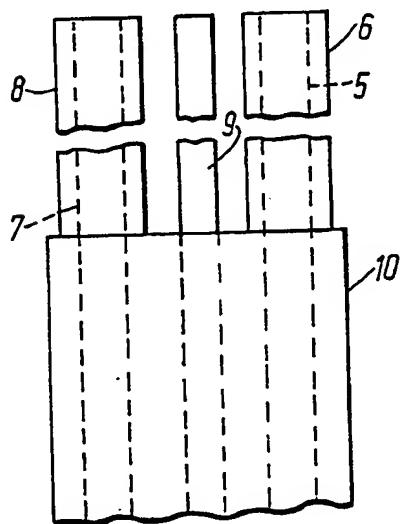
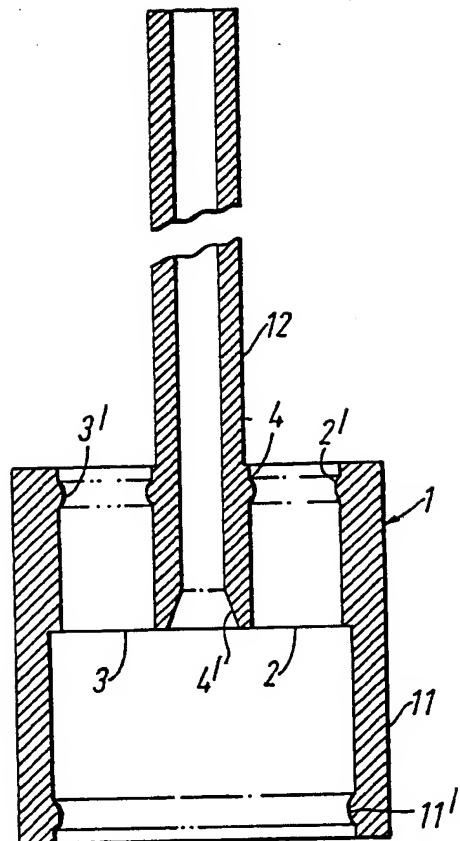


The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

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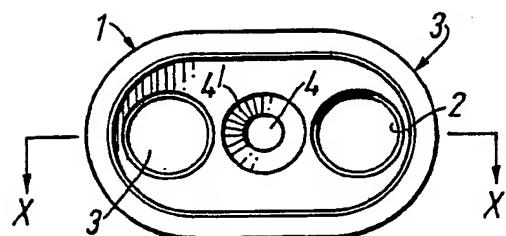
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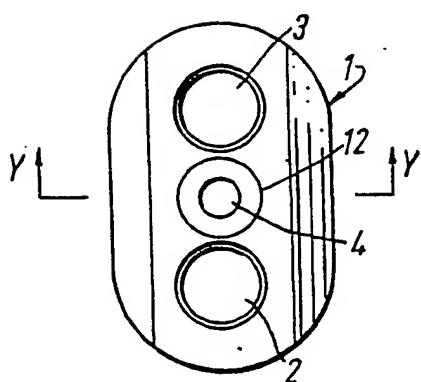
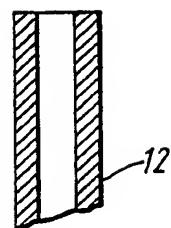
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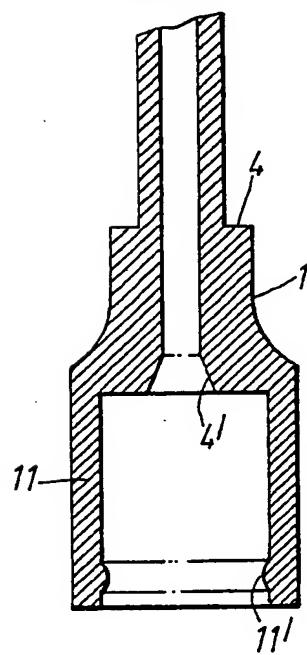
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F I G. 2



F I G. 3



F I G. 4

SPECIFICATION

Electrical insulating device

5 The present invention relates to an insulating device for the ends of electric cables and is particularly suitable for use with "flat, twin and earth" cable.

10 Use of flat, "twin and earth" cable has increased in the past six to seven years, and such cable comprises a generally flat or oval cable having a central, earth wire sandwiched between two outer, insulated cores with the three cores being held in position by the

15 insulating outer casing of the cable. Whilst the central earth wire does not normally have its own insulation in certain instances insulation therefor is also provided and the present invention is equally applicable for use therewith. Furthermore, the present invention may be modified for use with circular or other section cables where an adaption to the shape and location of the cores would be required.

When connecting the end of a flat, twin and earth cable to a unit such as a switch or socket of a like electrical component, it is first necessary to remove the outer and normally grey cable casing of insulating material to expose sufficient of the insulated cores and earth to enable connection to be effected. Because of the confined space in which the cable is often being used and the difficulty of cutting to a specific depth of the outer casing of the cable, the insulating material around the positive and negative cores is sometimes cut or nicked with the result that, upon subsequent testing, the insulation breaks down with a result that the wiring is found unsuitable.

It is an object of the present invention to provide a device which will improve the insulation characteristics of the end of the cables in a ready and simple manner.

According to the present invention an insulating device for use with the ends of electric cables, comprises a member of electrically insulating material which has an aperture or passage for receiving a central earth core and has receiving portions for the positive and negative core disposed either side of said aperture or passage and separated therefrom by the insulating material, such that when the device is inserted into position on the end of a cable, the three cores of the cable are spaced apart in a manner reducing the likelihood of short circuiting during testing.

Preferably the device has a portion surrounding said aperture or passage or portions on opposite sides of said aperture or passage for receiving the central earth wire such that, in use, said portion or portions of electrically insulating material extends between the cores in the region where the cable casing has been cut and, preferably, also extends upstream of such region into the end of the cable so as to thereby considerably improve the electric insu-

lation between the cores—especially in the region where the individual insulation around the conducting cores may have been cut or damaged.

70 Preferably the device has three apertures into which the three cores may be inserted and passed therethrough and preferably the device has an outer collar portion of slightly larger internal dimension than the outer case 75 of the cable so as to closely overlie such material to improve the insulating characteristics.

In a further development of the present invention and to comply with safety requirements, the front exposed end of the middle, earth wire or core is required to be insulated beyond the point of cut up to the point of connection and the present invention aims at facilitating such extra insulation. Hitherto removed insulating material sleeving is sometimes inserted over the earth wire and whilst such arrangement may be used with the present device in its simplest form and preferably having a suitable recess for receiving the end 90 of the sleeving, an alternative, integral arrangement is also envisaged.

The passage for receiving the earth wire may be suitably shaped e.g. by a conical, inwardly tapering chamfer, so as to also 95 closely receive any cut-off insulating material if such is not provided integrally.

In this alternative arrangement, the passage which receives the central earth core has an extension thereto, preferably integrally 100 moulded therewith, of electrically insulating material extending on the side remote from the spacer members and remote from said outer collar when provided, and of such length and dimension as to closely seal 105 against the core being used and to meet specification requirements. Such extension piece may be cut to length as required.

The extension for the central earth core will be appropriately dimensioned for the cable 110 with which the device is being used to provide a close, water tight fit over the earth wire when located in position. Naturally, differently sized insulation devices will be required to be provided with different size cables.

115 Normally the device according to the present invention will be integrally moulded of electrically insulating material and preferably any extension provided on the front of the device will be flexible. It is possible for a 120 discrete tubular insulating extension to be separately applied to the device as mentioned.

It is necessary in certain circumstances for the central extension for covering the earth core and which is normally tubular, to be 125 colour coded—depending on the particular use e.g. red, green or yellow and provisions will have to be made in the moulding of the device. The device may have an outer profile similar to that of the flat cable.

130 The invention will be described further, by

way of example, with reference to the accompanying drawings in which:-

Figure 1 is a cross section on the line X-X of Fig. 2 and also including a schematic illustration of a cable with exposed end;

Figure 2 is an end view of the device looking into the end into which the cable end is inserted, whilst;

Figure 3 is a plan or end view of the device, viewed from the end opposite that into which the cable end is inserted; and

Figure 4 is a section on the line Y-Y of Fig. 3.

The electrical insulating device according to the present invention is an integrally moulded member comprising a body 1 having three passages 2, 3 and 4 extending therethrough for respectively receiving outer core 5 and its electrical insulating covering 6, outer core 7 and its insulating covering 8, and a central earth core 9 without insulating covering in this instance. The outer insulating material or casing of the cable is referenced 10—as illustrated schematically in Fig. 1 and has been cut-away at the end.

The bores of passages 2 and 3 have beadings 2' and 3' to ensure close abutment thereof against the insulating coverings 6 and 8. The entrance to passage 4 from the upstream or rear cable side has a recess portion 4' for guidance and fitting of the central uncovered earth core 9 and the region defining such interspaces itself when the device is in position between the earth core 9 and the insulating coverings 6 and 8 of cores 5 and 7 in the region where the casing 10 has been removed and, in position of use, acts to improve the insulation in such region. On the rear side which might be regarded as that which faces the main cable section, a collar portion 11 is formed which is intended to overlie the outer casing 10 of the cable to secure the end thereof and beading 11' or other protection means is provided to ensure close engagement.

The front end of the walls defining the passage 4 extends in a tubular portion 12 on the opposite side to collar 11 and acts to provide the additional electrical insulation as is now sometimes required for the central earth core 9. Such tubular portion 12 may be suitably colour coded for the particular use. It is intended that the sleeve 12 be of required dimensions so as to provide the desired electrical insulation and to prevent water penetration in accordance with the specific standards in force. This sleeve portion 12 is preferably flexible to facilitate connection. In an alternative arrangement portion 12 may be omitted from the device of the invention and desired insulation provided in known manner or a special, separate cover member provided and recess means on the main body 1 provided to receive such.

65 The outer walls of the main body 1 will be

suitably produced and radiused to provide a grip for the device when such is being inserted over the end of a cable.

It will be appreciated that the device according to the present invention is for use on the end of cables from which the outer casing has been removed and acts to prevent or reduce the dangers of tracking and, furthermore, strengthens cut or marked cores against breaking or other weakening. Furthermore, the device enables an airtight sleeving for all cores to be provided and, furthermore, with suitable dimensioning and construction and utilisation of material, the device may seal the cable end and cores against penetration by moisture. Furthermore, the device acts to prevent or minimize movement of sleeving on the middle core and provides a neat ending of the cable in the cut region. The device can be made economically and of the required size ranges and is of light weight and simple to manufacture.

The device is intended to be used for what is generally referred to as "flat" or generally oval three core cable but may be utilised with other arrangements, e.g. two core, with suitable modification as will be apparent to a person skilled in the art.

95 CLAIMS

1. An insulating device for use with the ends of electric cables, comprising a member of electrically insulating material which has an aperture or passage for receiving a central earth core and has receiving portions for the positive and negative core disposed either side of said aperture or passage and separated therefrom by the insulating material, such that when the device is inserted into position on the end of a cable, the three cores of the cable are spaced apart in a manner reducing the likelihood of short circuiting during testing.

2. An insulating device as claimed in claim 1 having a portion surrounding said aperture or passage or portions on opposite sides of said aperture or passage for receiving the central earth wire such that, in use, said portion or portions of electrically insulating material extends or extend between the cores in the region where the cable casing has been cut.

3. An insulating device as claimed in claim 2 in which said portion or portions also extends or extend upstream of such region into the end of the cable so as to thereby considerably improve the electric insulation between the cores.

4. An insulating device as claimed in any of claims 1 to 3, having three apertures into which three cores may be inserted and passed therethrough, in which the device has an outer collar portion of slightly larger internal dimension than the outer case of the cable so as to closely overlie such material to improve

the insulating characteristics.

5. An insulating device, as claimed in any of claims 1 to 4, in which the front exposed end of the middle, earth wire or core is insulatable beyond the point of cut up to the point of connection by means of a suitable recess in the device for receiving the end of hitherto removed but subsequently replaced insulating material sleeving.
- 10 6. An insulating device as claimed in claim 5 in which the passage for receiving the earth wire may be suitably shaped so as to closely receive any cut-off insulating material.
- .7. An insulating device as claimed in 15 of claims 1 to 4, in which the passage which receives the central earth core has an extension thereto of electrically insulating material extending from the side remote from the core spacing portions of the device and remote 20 from said outer collar when provided, and in which said extension is of such length and dimension as to closely seal against the core being used.
8. An insulating device as claimed in 25 claim 7, in which the extension is integrally moulded with the device.
9. An insulating device as claimed in claim 7 or 8 in which the extension for the central earth core is flexible.
- 30 10. An insulating device as claimed in any of claims 7 to 9, in which the extension is colour coded for its intended electrical use.
11. An electric insulating device substantially as herein described with reference to 35 and as illustrated in the accompanying drawings.

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